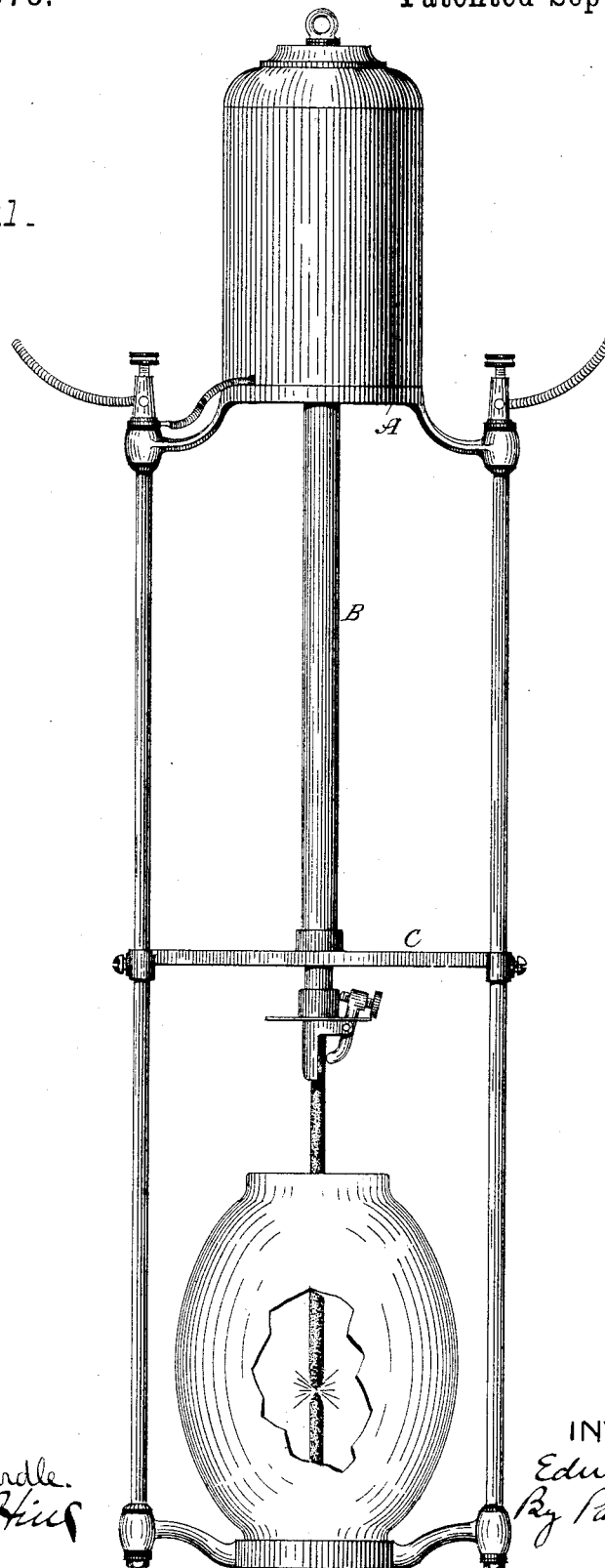


E. WESTON.
ELECTRIC ARC LAMP.

No. 264,978.

Patented Sept. 26, 1882.

Fig. 1.



ATTEST:

Julian A. Hurdle.
Henry Hurdle

INVENTOR:

Edward Weston
By Parker W. Page
att'y.

(No Model.)

2 Sheets—Sheet 2.

E. WESTON.
ELECTRIC ARC LAMP.

No. 264,978.

Patented Sept. 26, 1882.

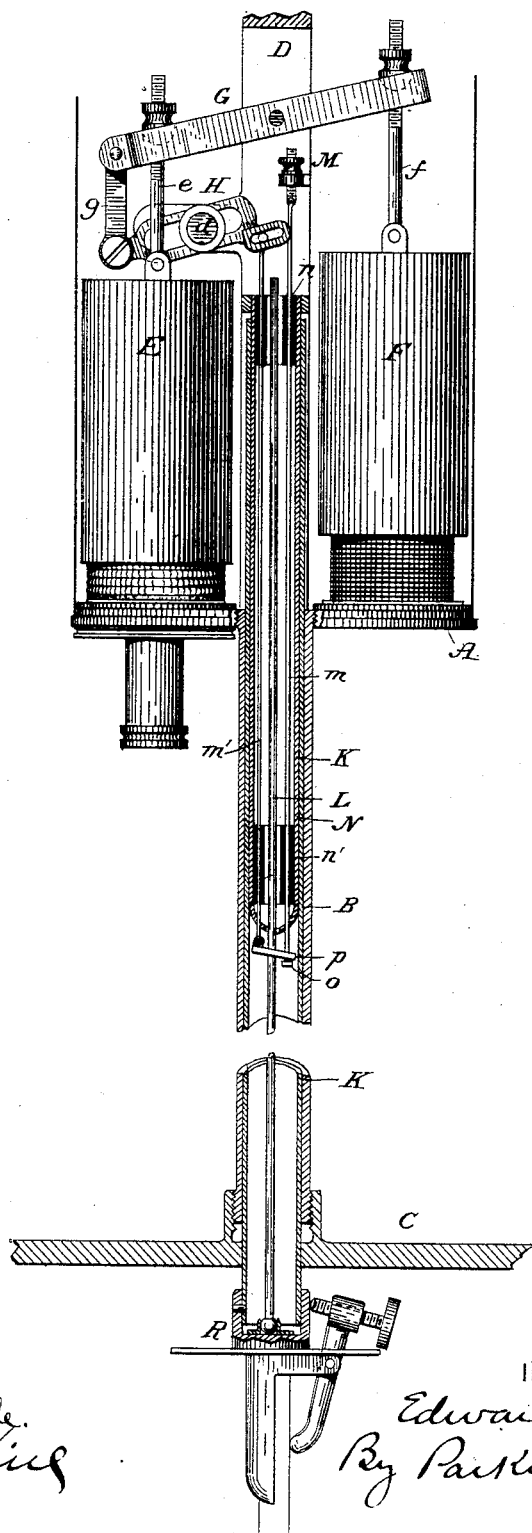


Fig.2.

ATTEST:

Julian A. Mordle.
New York

INVENTOR:

Edward Weston
By Parker W. Page
atty.

UNITED STATES PATENT OFFICE.

EDWARD WESTON, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE UNITED STATES ELECTRIC LIGHTING COMPANY, OF NEW YORK, N. Y.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 264,972, dated September 26, 1882.

Application filed May 8, 1882. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WESTON, a subject of the Queen of Great Britain, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Electric-Arc Lamps, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

It is well known that those electric lamps known as "clutch-lamps" contain a long, smooth rod, called the carbon "holder" or "carrier," upon which the clutch or clamp is caused to operate by the magnets controlling the feed. The extreme delicacy of action necessary to the successful and even running of the lamps in question requires that this rod be kept perfectly smooth and entirely free from accumulations of dust and grease. In most lamps, however, this rod is exposed to the air and is subject to accumulations of dust carried upward by the heat of the arc, from which cause alone the attention and care of the lamps are greatly increased.

In order to avoid the necessity of repeatedly cleaning and polishing the carbon-carrier various expedients have been resorted to by myself and by others, among which the most practicable are to inclose the carbon-carrier and electrodes in a protective casing formed partly by a tube and partly by a transparent globe, or to employ a tube for the carbon-carrier and to effect the feed by means of properly-constructed devices, which act on the interior surface of the said tube.

My present invention relates mainly to improvements on the above-described means of protecting the carbon-carrier, and involves the employment of a carbon-carrier formed as a tube with a rod of small diameter extending through it, upon which rod is caused to act a clutch mechanism of proper construction connected with and operated by the feed-controlling magnets.

The plan of construction of the devices which I have adopted for carrying out my invention will be more fully described by reference to the accompanying drawings, in which—

Figure 1 is a view of a lamp complete and constructed according to my present inven-

tion; and Fig. 2 a view of the interior of the same, partly in section, for illustrating the details of construction.

The lamp-frame and other features not forming a part of the feed mechanism are similar to those illustrated in patents granted to me, and in applications by me made, and will not therefore be described herein.

To the center of the cross-bar or plate A is attached a tube, B, the lower end of which is held by a perforated bar or plate, C, clamped to the side bars of the frame.

D is a U-shaped frame, one-half of which is shown fixed to the upper side of plate A, on opposite sides of which the electro-magnets or solenoids E F are placed, the former having its coils included in the main or arc circuit, the latter with coils forming part of a shunt of high resistance about the lamp. The specific character of the magnets may be greatly varied. I prefer, however, to employ helices in conjunction with armatures formed by solid cores attached to inclosing-shells of iron, as described in a patent granted to me under date of March 21, 1882, No. 255,365. From the opposite ends of a bar, G, pivoted in the frame D, the armatures are adjustably suspended by means of the stems *e f*, and to the end of the bar G, from which depends the armature of the main circuit-magnet, is connected also a slotted lever, H, by means of a pivoted link, *g*. The lever H is pivoted to frame D by a pin, *d*, and the clutch-rod is connected to its end by being bent over at right angles and passed through a small slot, the purpose of such construction being to secure compactness, increased range of movement, and to maintain the clutch-rod in the same vertical line while imparting to it the requisite up-and-down movement.

The carbon carrier or holder consists of a tube, K, containing a smooth steel wire, L, preferably connected to its lower end by a ball-and-socket joint, as shown. Tube K is arranged to slide freely in the tube B and over a tube or core, N, fixed by its upper end to the frame D. Tube B serves as a guide for the carbon-carrier and prevents lateral movement of the same and consequent displacement of the carbon-points. Tube N is also useful in this

connection, while it subserves other purposes, as will be explained. In the ends of the tube or core N are inserted perforated plugs of insulating material *n n'*, which serve as guides. 5 Through perforations in their centers extends the steel wire L. Through other suitably-placed perforations extend a wire, *m*, and a wire, *m'*. The wire *m* is connected to the frame D by a screw, M. Its lower end passes through 10 an annular clamp, *p*, which surrounds the wire L, and is provided with a stop, *o*. Wire *m'*, at its lower end, is pivoted to the annular clamp *p*, and is connected above to the lever H, as above set forth.

15 The operation of a lamp thus constructed is as follows: Under normal conditions of are the main magnet preponderates, holding the lever G down and lever H up in a position which causes the wire *m'* to tilt the clamp *p*. 20 As in this position the clamp binds the wire L, the carbon-holder is checked against downward movement. These conditions are reversed by the preponderating influence of the shunt-magnet, caused by the elongation of the 25 arc and consequent diversion of current around the lamp, for when this takes place wire *m'* is lowered until the clamp is freed from the wire and allowed to fall. It will thus be seen that in so far as the principle of feeding is concerned the lamp differs in no respect from other 30 well-known forms of clutch-lamp.

It may be stated that the wire *m'* could be connected directly to the bar G on the side of the shunt-magnet. Such an arrangement is 35 not, however, as practicable as that shown, and I regard the combination of the lever H with the bar G, from the greater compactness of the parts and range of motion obtained by its use, as a material part of the present invention. 40

It will be seen that the wire L, which in this lamp takes the place, so far as the operation of feeding is concerned, of the ordinary carbon-holder, is entirely inclosed and protected. It

is by this means kept bright and free from dirt, 45 so that much of the attention and care usually required for these lamps is avoided, as it will seldom or never need to be cleaned. The wire L is secured within the tube K by attachment to a removable cap, R, so that it may be readily withdrawn should it become necessary to do so. 50

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is— 55

1. The combination, with the feed-controlling magnets of an electric lamp and clutch mechanism connected with and operated by the same, of a carbon-holder consisting of a tube inclosing a wire or rod upon which the 60 said clutch mechanism acts, as set forth.

2. A carbon-carrier consisting of a tube inclosing a rod or wire, in combination with a clutch surrounding the said rod, and wires for supporting and operating the clutch, the said 65 wires passing up through the tube and being connected, one with the lamp-frame, the other with the electro-magnets, as and for the purpose set forth.

3. The combination, with the guide-tubes B and N, of a carbon-carrier consisting of a tube, K, inclosing a rod or wire of steel, and clutch mechanism contained within tube K and arranged to act upon the rod contained therein, as set forth. 70

4. A carbon-carrier consisting of a tube inclosing a rod or wire, connected to the bottom of said tube by a universal joint, in combination with a perforated clutch contained within the tube and electro-magnets with which the 80 tube is connected and by which it is operated in the manner hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 3d day of May, 1882.

EDWARD WESTON.

Witnesses:

HENRY A. BECKMEYER,
R. F. BARNES.